Diplocentrus bigbendensis, a New Species of Scorpion

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These are large diplocentrid scorpions with their center of distribution apparently in the Big Bend National Park, Texas. Venom reaction, typical for the family, consisting of relatively mild edema and burning sensation at site of sting.

Diplocentrus bigbendensis sp. n.

Holotype: ♂, ASU 57-1190. Grapevine Springs, Big Bend National Park, Texas, U. S. A. In definite burrow under door plank in front of adobe house. June 7, 1957. W. G. Degenhardt.

Allotype: ♀, ASU 57-1194. Locality same as holotype. "Crawling on ground near adobe house on hot dry night." June 10, 1957. W. G. Degenhardt.

Paratypes: All from Big Bend National Park, Texas. ASU 1643, ♂, bedroom floor, 8–26–55 (J. Palmer). ASU 56-231, ♀, in tent house, 9–27–56 (D. Rodriguez). ASU 56-38, ♂, Window Trail, under rock, 7–19–56 (R. Curbow). ASU 64-139, ♀, Government Springs, under rock, 8–20–59 (H. L. Stahnke).

All types are in the museum of the Arizona State University.

Diagnosis

A large scorpion; approximately the size of *Diplocentrus ochoterenai* Hoffman, 1931 and *Didymocentrus taibeli* Caporiacco, 1938. The Mexican species, *D. ochoterenai* has yellowish brown legs contrasting with a dorsum that to the unaided eye is a concolorous dark brown but actually has a fuscous, variegated pattern on trunk dorsum. The new species appears shiny black with legs a dark, reddish brown but also has a

fuscous variegated pattern on trunk dorsum. Furthermore, the appendages and cauda have a variegated, fuscous pattern while in *D. ochoterenai* these are concolorous. The following comparative data indicate other relationships between the two species:

TABLE 1. Comparison of *D. ochoterenai* and *bigbendensis*.

		D. ochoterenai	D. bigbendensis
Tarsomere II spine formula:	♂	$\frac{7}{7}\ \frac{7}{7}$; $\frac{7}{8}\ \frac{7}{8}$; $\frac{8}{8}\ \frac{7}{8}$; $\frac{8}{8}\ \frac{8}{8}$	$\frac{5}{7}\ \frac{6}{7}$; $\frac{6}{8}\ \frac{6}{7}$; $\frac{7}{9}\ \frac{7}{8}$; $\frac{7}{8}\ \frac{7}{8}$
	♀	$\frac{6}{6}\ \frac{6}{6}$; $\frac{6}{7}\ \frac{7}{7}$; $\frac{7}{7}\ \frac{7}{8}$; $\frac{7}{8}\ \frac{7}{8}$	$\frac{6}{7}\ \frac{6}{7}$; $\frac{6}{8}\ \frac{6}{8}$; $\frac{6}{8}\ \frac{7}{8}$; $\frac{7}{8}\ \frac{7}{8}$
Pectinal Teeth:	♂	17/17	18/18 to 20/20
	♀	16/16	14/14 to 16/15
Ratios*: (code Nos.)			
$\frac{4}{6}$:	♂	0.90	0.92-1.00
	♀	0.94	0.94-1.00
$\frac{4}{25}$:	♂	0.97	1.06-1.11
	♀	1.15	1.27
$\frac{25}{37}$:	♂	0.81	0.66-0.69
	♀	0.78	0.65-0.71
$\frac{6\text{-}5}{4}$:	♂	0.59	0.49-0.56
	♀	0.55	0.51-0.56

* (Key to code numbers is given following Table 2.)

The difference in the above table together with those of coloration suggest a separate taxon.

DESCRIPTION

Both sexes, to unaided eye, appear a shiny black. Actually, appendages (except pectines), metasoma, and dorsum of pro-

soma and mesosoma a dark, reddish brown freely invaded by variegated, fuscous pattern; moderately hirsute and in general agranular. Legs slightly lighter than body proper. Pectines and venter of mesosoma concolorous; former yellowish brown and latter medium brown.

PROSOMA

Carapace with three pairs lateral eyes. Anterior median notch extends to level beyond that of posterior margin of first pair of lateral eyes. Surface shiny and essentially agranular. Central ocular furrow lacking. Posterior marginal furrow not continuous with posterior lateral furrows.

Sternum subpentagonal with lateral sides subparallel. Deep median furrow, which is not distinctly triangular in shape at base, extends through posterior half before forming a depressed, flat diamond-shaped area.

Chelicera with forked movable finger; inferior tine approximately three times length of superior tine; inner superior margin with one large tooth flanked by two considerably smaller subequal teeth; the most distal of the small teeth on the side of the superior tine, the proximal one is not connected to base of median tooth.

Pedipalps: Tarsus of chela very dark, reddish brown; densely hirsute; densely and coarsely punctate. Large lateral granules give cutting edge scalloped appearance. Tibia like tarsus in general appearance. Four trichobothria (Fig. 1) on inner surface; seven on exterior surface, including M_1. D_4 distal to D_5. Manus of ♂ with pronounced costate reticulations over entire exterior surface; ♀ with indistinct costate but distinct fuscous reticulations. On ♂ all keels strongly developed; weakly so on ♀ but well represented by pigmentation. Fifteen trichobothria (Fig. 1). $E_{2,\ 1\ \text{and}\ 3}$ form acute angle; $B_{3,\ 4\ \text{and}\ 5}$ form a scalene triangle. No three M trichobothria are in line. Patella with dorso-inner keel strongly developed, agranular, and bears three trichobothria. Exterior surface convex and bears 13 trichobothria: 5 proximad, followed by two groups of two

each plus a cluster of four at distal end. Femur with three trichobothria: one on the extreme proximal margin of dorso-inner edge; another a short distance from proximal margin just above dorso-exterior edge; the third, about one-third the distance of the femur length from the proximal margin just below dorso-exterior edge. Inner surface and keels with large cone-shaped granules; other surfaces on keels agranular or bear only a few granules.

Walking Legs: Tarsal claws and pedal spurs well developed; median claws short and broad. Lateral terminal lobes rounded forming a sharply acute angle with median tarsal lobes; tarsal spines arranged along rounded, distal margin. See TABLE 2 for tarsal formulae.

OPISTHOSOMA

Mesosoma: Terga in ♂, finely and densely granular; in ♀ smooth, shiny with few granules; sparsely hirsute; without distinct keels. Sternite VII with four distinct keels which bifurcate posteriorly. Stigma elongate and recessed; distinctly so on ♂. Genital operculum subovular, at least twice as wide as long; undivided in ♀, divided in ♂ with well developed genital papillae. Pectines. See TABLE 2 for number of teeth. ♂ teeth much longer and broader than ♀ teeth. Free margin of basal middle lamella of ♂ forms 90° angle with denticular margin of pectin; ♀ angle about 140°. No small middle lamella; second marginal lamella extends to fulcra which are subtriangular and distinct. *Sinnesborsten* cover about 80% of the ventro-inner margin of each tooth on ♂; about 30% on ♀. Basal piece at least 1.75 times broader than long; posterior margin slightly convex, anterior margin with broad median notch.

Metasoma: All segments moderately hirsute on ventral and lateral surfaces; ♀ less so. Most keels well developed and essentially agranular except as noted. Median laterals agranular on segment I, weakly developed and bearing a few large granules on II. Inferior lateral granular on I and II; weakly developed

and slightly agranular on III of ♂ but well developed and granular on ♀; on IV of ♂ vestigial with few granules but on ♀ well developed and agranular; on V both sexes bear very large, coarse granules. Inferior median keels strongly developed and granular on ♀ segments I–III but only on segments I and

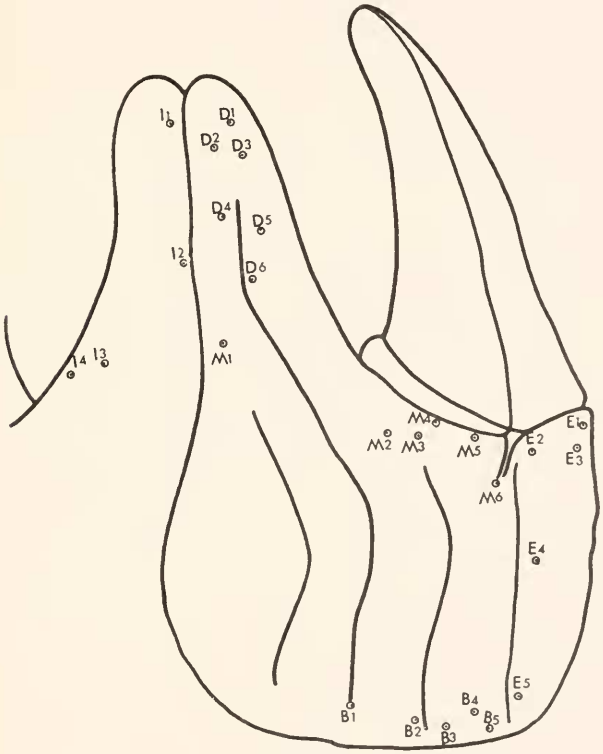

Fig. 1.

II of ♂; vestigial on ♂ segment IV, weakly developed on ♀ with granules on proximal two-thirds; on V a single, well developed median keel covered by large, conical granules. Crescentic area well developed, broader than long and sharply outlined with large granules which are *not* continuous with lateral granules

of anterior crest of anal arch which bears a continuous row of nine broad, chisel-shaped granules. Posterior crest of anal arch

TABLE 2. Table of measurements in mm

Code for ratio numbers: 4, carapace length; 5, carapace anterior width; 6, carapace posterior width; 11, length of pecten dentate area; 25, caudal segment V length; 26, caudal segment V width; 27, telson length; 29, telson width; 33, pedipalp tibia length; 35, manus width; 37, tarsus (movable finger) length; 43, walking leg IV coxal length. Distance between trichobothria: 60, D_1–D_6; 61, D_1–M_1; 62, D_1–M_2; 71, D_6–M_1; 72, M_1–M_5; 73, M_1–B_1; 74, M_2–B_1.

Table of Measurements in mm

	Holotype	Paratypes		Allotype	Paratypes	
	57-1190	56-38	1643	57-1194	56-231	64-139
Sex	♂	♂	♂	♀	♀	♀
Pectinal teeth	20/20	18/18	19/19	16/15	14/15	15/14
Tarsal spine formula	5/7 6/7: 6/8 6/7: 7/9 7/8: 7/8 7/8	6/7 6/7: 6/7 6/7: 7/8 7/8: 7/8 7/8	6/7 6/7: 6/7 6/7: 7/8 7/8: 7/8 7/8	6/7 6/7: 6/8 6/8: 6/8 7/8: 7/8 7/8	5/7 5/7: 7/7 6/7: 7/8 7/8: 7/8 7/8	5/7 6/7: 6/8 7/8: 8/9 7/8: 7/8 8/8
Total L.	65.65	63.60	63.90	73.51	67.40	53.40
Trunk L.	27.80	30.00*	27.20	37.34*	33.20	26.70*
Metasoma L.	37.85	33.60	36.70	36.17	35.20	26.70
Ratios:						
4/6	0.97	0.92	1.00	1.00	0.94	0.97
4/25	1.10	1.06	1.11	1.27	1.27	1.27
4/33	0.49	0.48	0.48	0.54	0.55	0.55
4/37	0.76	0.74	0.73	0.83	0.85	0.89
6-5/4	0.52	0.56	0.49	0.51	0.56	0.51
11/43	1.07	1.03	1.07	0.56	0.54	0.53
25/37	0.69	0.69	0.66	0.65	0.67	0.71
26/29	0.91	0.94	0.85	0.88	0.84	0.86
35/33	0.39	0.38	0.36	0.42	0.46	0.47
25/27	1.18	1.26	1.27	1.09	1.10	1.09
60/61	0.76	0.77	0.73	0.79	0.73	0.74
60/62	0.55	0.60	0.58	0.57	0.56	0.57
61/62	0.72	0.78	0.80	0.72	0.78	0.78
71/72	0.36	0.40	0.50	0.37	0.36	0.36
73/74	1.26	1.19	1.20	1.25	1.24	1.17

* Distended pre-abdomen

agranular. Telson moderately hirsute. Agranular except for clusters of 3, 3, 3 on ventro-proximal margin. Aculeus short, sharply curved with large, blunt subaculear tubercle whose distal edge forms about an 80° angle with telson surface. Ampulla width at least 1.09 times the width of caudal segment V and at least 0.72 times the width of caudal segment I.

Discussion

Measurements for trunk length made up of cumulative total of individual lengths of sclerotized areas of tergites plus carapace length. Even so, because of unusually distended preabdomen or *vice versa* this total length is not reliable. The metasomal length made up of cumulative total of individual lengths taken along posterior keels of non-telescopic portions plus telson length is highly repeatable. Sexual dimorphism is indicated as follows: (4/25) (4/33) (4/37). ♀ caudal segment V, pedipalp tibia and tarsal lengths shorter in relation to carapace than in the ♂. In (11/43) the ♂ the ratio of the coxal length of walking leg IV to length of pecten dentate area is about twice that of ♀. (35/33). Manus of ♂ pedipalp narrower in relation to tibia length than in ♀; thus ♀ chela visually seems much broader than that of ♂. (25/27). Caudal segment V of ♂ is longer in relation to telson length than in ♀ but telson length is greater than segment V in both sexes. Code numbers 60–74 indicate that trichobothrial distances are seemingly not influenced by sex and may be consistent throughout the species.